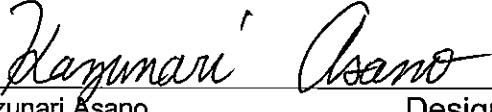


TEST DATA OF MGFW302412

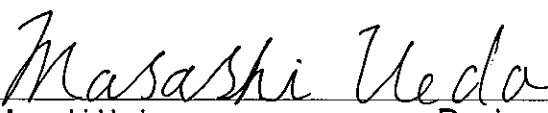
Regulated DC Power Supply

November 19, 2010

Approved by :


Kazunari Asano
Design Manager

Prepared by :

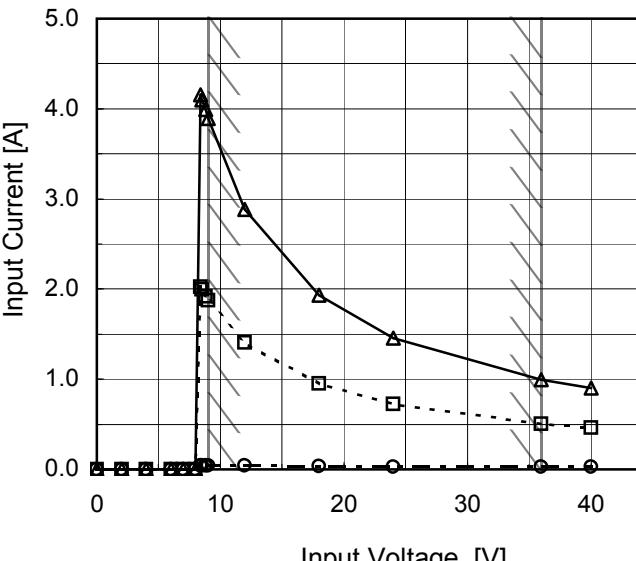

Masashi Ueda
Design Engineer

COSEL CO.,LTD.

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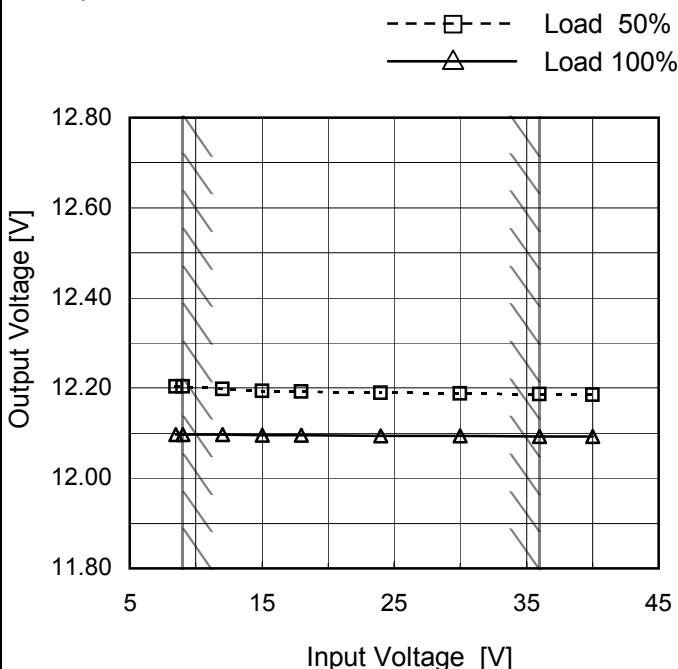
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Model	MGFW302412
Item	Line Regulation
Object	+12V1.25A

1.Graph

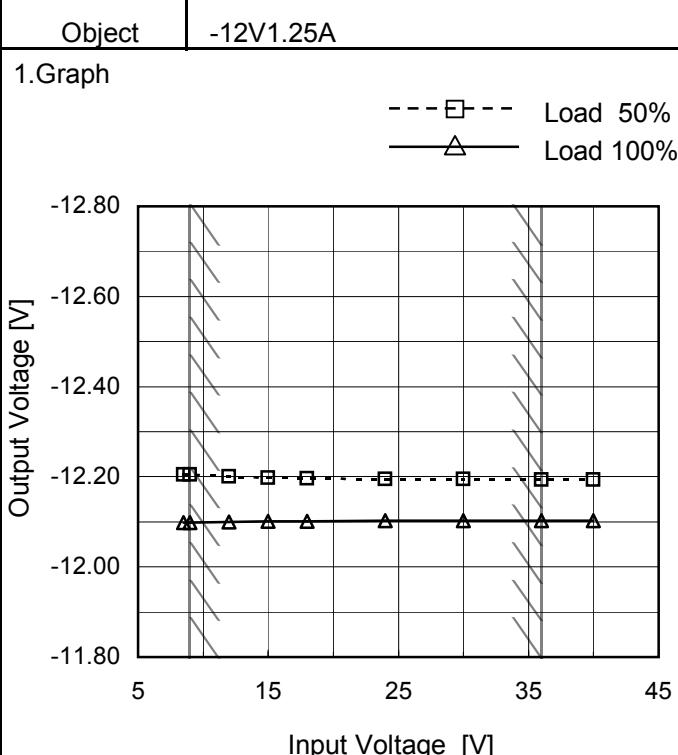


Temperature 25°C
Testing Circuitry Figure A

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8.5	12.204	12.097
9.0	12.204	12.097
12.0	12.198	12.096
15.0	12.194	12.096
18.0	12.192	12.095
24.0	12.189	12.094
30.0	12.187	12.094
36.0	12.186	12.093
40.0	12.185	12.093

-12V: Rated output current



2.Values

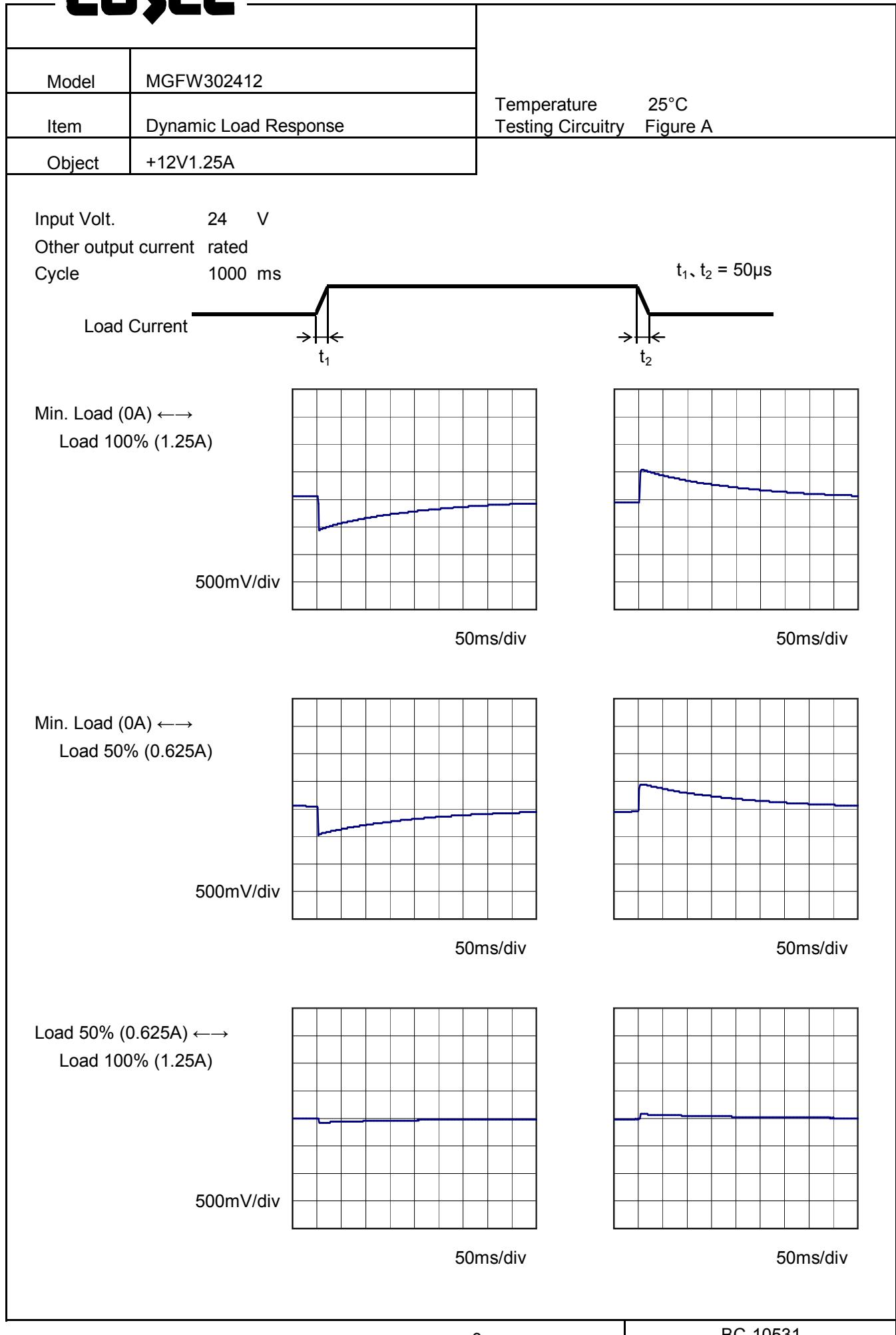
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8.5	-12.205	-12.099
9.0	-12.205	-12.099
12.0	-12.200	-12.100
15.0	-12.198	-12.101
18.0	-12.197	-12.101
24.0	-12.195	-12.102
30.0	-12.194	-12.103
36.0	-12.194	-12.103
40.0	-12.194	-12.103

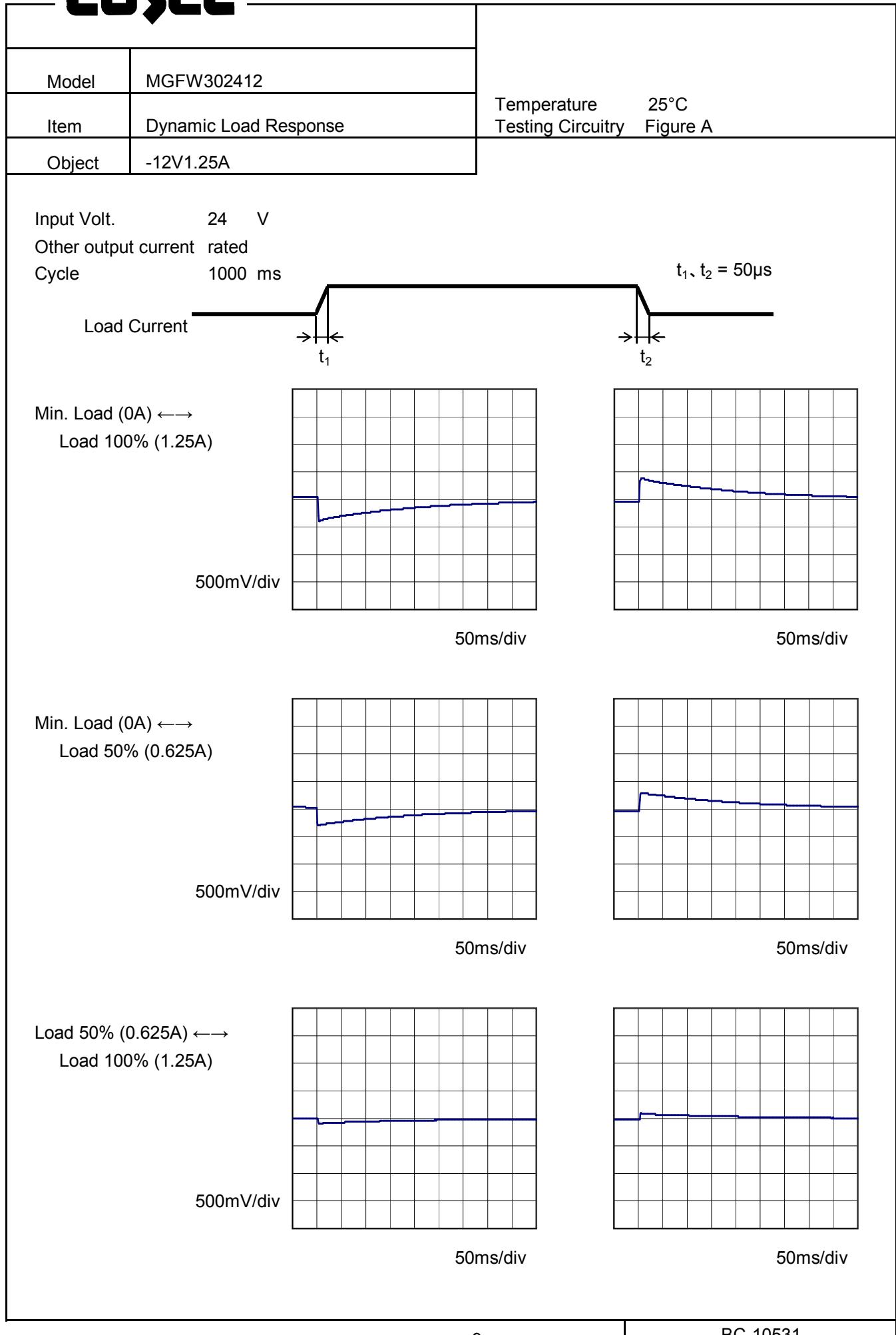
+12V: Rated output current

Note: Slanted line shows the range of the rated input voltage.

COSEL

Model	MGFW302412	Temperature Testing Circuitry	25°C Figure A																																																																													
Item	Load Regulation																																																																															
Object	+12V1.25A																																																																															
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COSSEL

Model	MGFW302412	Temperature	25°C																																						
Item	Ripple Voltage (by Load Current)	Testing Circuitry	Figure B																																						
Object	+12V1.25A																																								
1.Graph		2.Values																																							
<p>The graph plots Ripple Voltage [mV] on the Y-axis (0 to 120) against Load Current [A] on the X-axis (0.0 to 1.6). Two sets of data points are shown: one for Input Volt. 9V (solid triangles) and one for Input Volt. 36V (dashed circles). A horizontal dashed line at approximately 18 mV represents the output voltage. A slanted line connects the data points at 0.0A and 1.25A, defining the rated load current range.</p>		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Input Volt. 9 [V]</th> <th>Input Volt. 36 [V]</th> </tr> </thead> <tbody> <tr><td>0.000</td><td>6</td><td>11</td></tr> <tr><td>0.250</td><td>11</td><td>20</td></tr> <tr><td>0.500</td><td>11</td><td>20</td></tr> <tr><td>0.750</td><td>11</td><td>20</td></tr> <tr><td>1.000</td><td>11</td><td>19</td></tr> <tr><td>1.250</td><td>11</td><td>19</td></tr> <tr><td>1.375</td><td>11</td><td>19</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table> <p>-12V: Rated output current</p>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 9 [V]	Input Volt. 36 [V]	0.000	6	11	0.250	11	20	0.500	11	20	0.750	11	20	1.000	11	19	1.250	11	19	1.375	11	19	--	-	-	--	-	-	--	-	-	--	-	-
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<p>Ripple [mVp-p]</p> <p>Fig.Complex Ripple Wave Form</p>																																									

COSSEL

Model	MGFW302412																																							
Item	Ripple Voltage (by Load Current)	Temperature 25°C Testing Circuitry Figure B																																						
Object	-12V1.25A																																							
1.Graph																																								
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COSEL

Model	MGFW302412																																							
Item	Ripple-Noise	Temperature 25°C Testing Circuitry Figure B																																						
Object	+12V1.25A																																							
1.Graph																																								
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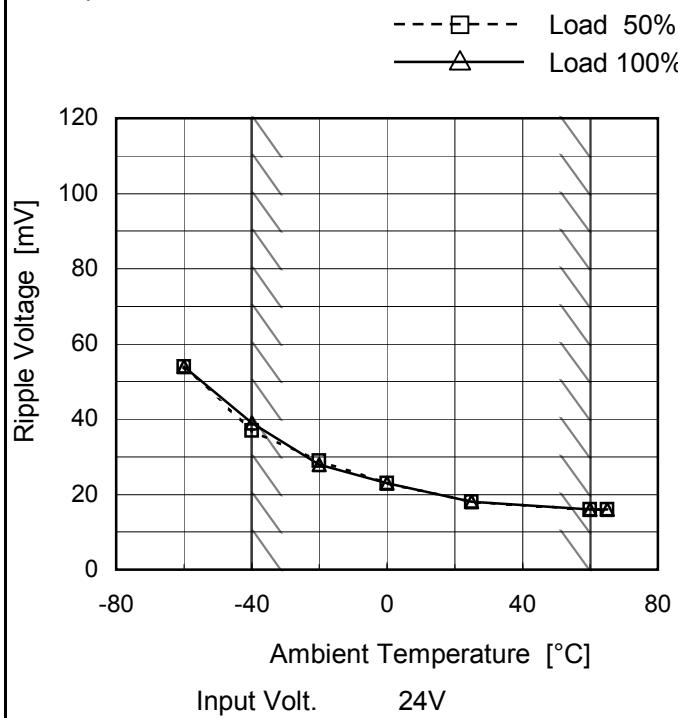


Model	MGFW302412																																							
Item	Ripple-Noise	Temperature 25°C Testing Circuitry Figure B																																						
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COSEL

Model	MGFW302412
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V1.25A

1.Graph



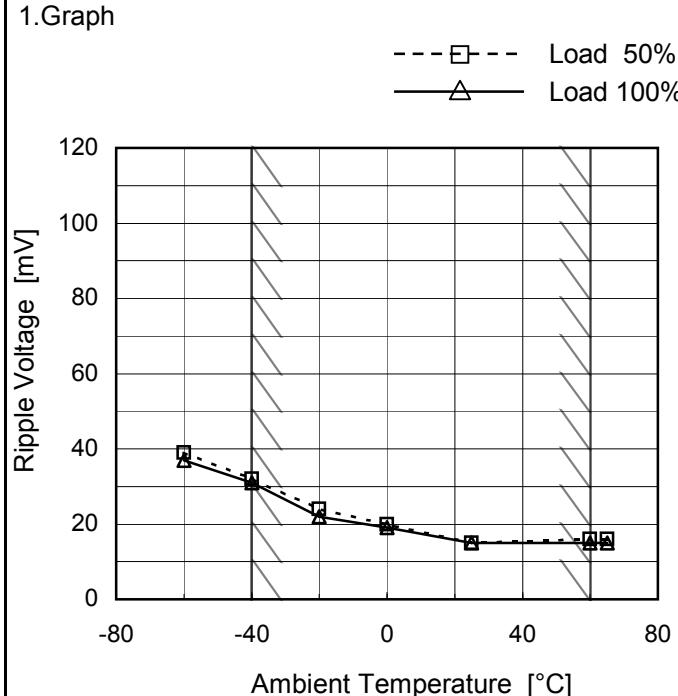
Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	54	54
-40	37	39
-20	29	28
0	23	23
25	18	18
60	16	16
65	16	16
--	-	-
--	-	-
--	-	-
--	-	-

-12V: Rated output current

1.Graph



2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	39	37
-40	32	31
-20	24	22
0	20	19
25	15	15
60	16	15
65	16	15
--	-	-
--	-	-
--	-	-
--	-	-

+12V: Rated output current

Measured by 100 MHz Oscilloscope.

Note: Slanted line shows the range of the rated ambient temperature.

Model	MGFW302412	Testing Circuitry Figure A																																																																																	
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Model	MGFW302412	Testing Circuitry Figure A
Item	Output Voltage Accuracy	

1. Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -40 - 60°C

Input Voltage : 9 - 36V

Load Current (AVR 1) : 0 - 1.25A (AVR 2) : 0 - 1.25A

* Other Output : Rated Load

* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

$$\text{* Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2. Values

Object		+12V1.25A		Output		Output Voltage Accuracy	
Item	Temperature [°C]	Input Voltage[V]	Output		Value [mV]	Ration [%]	
			Current[A]	Voltage[V]			
Maximum Voltage	60	36	0	12.625	± 273	± 2.3	
Minimum Voltage	-40	9	1.25	12.080			

Object		-12V1.25A		Output		Output Voltage Accuracy	
Item	Temperature [°C]	Input Voltage[V]	Output		Value [mV]	Ration [%]	
			Current[A]	Voltage[V]			
Maximum Voltage	60	12	0	-12.531	± 225	± 1.9	
Minimum Voltage	-40	9	1.25	-12.082			

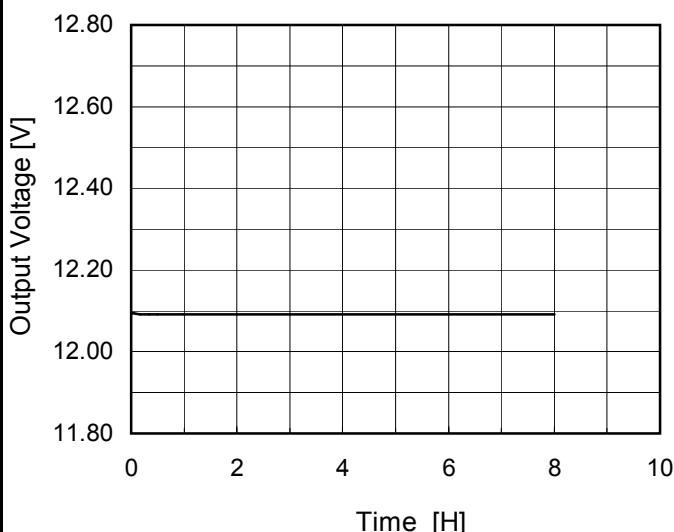
COSEL

Model	MGFW302412
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Item	Time Lapse Drift
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Object	+12V1.25A
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1.Graph



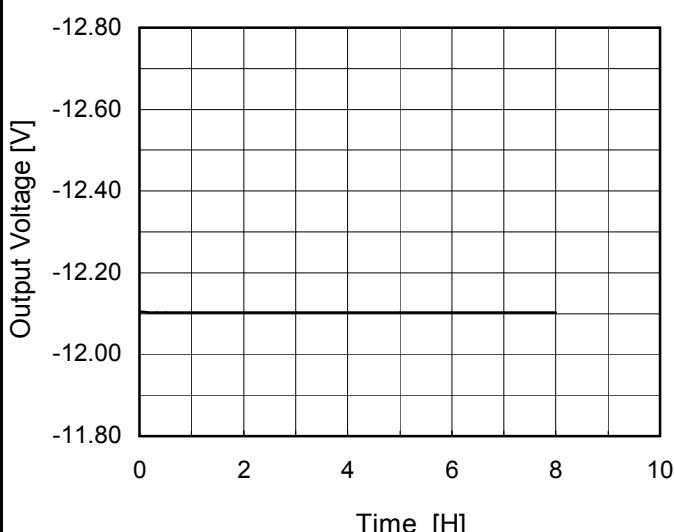
Temperature	25°C
Testing Circuitry	Figure A

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.092
0.5	12.092
1.0	12.092
2.0	12.092
3.0	12.092
4.0	12.092
5.0	12.092
6.0	12.092
7.0	12.092
8.0	12.092

Object	-12V1.25A
--------	-----------

1.Graph



2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.101
0.5	-12.103
1.0	-12.103
2.0	-12.103
3.0	-12.103
4.0	-12.103
5.0	-12.103
6.0	-12.103
7.0	-12.103
8.0	-12.103

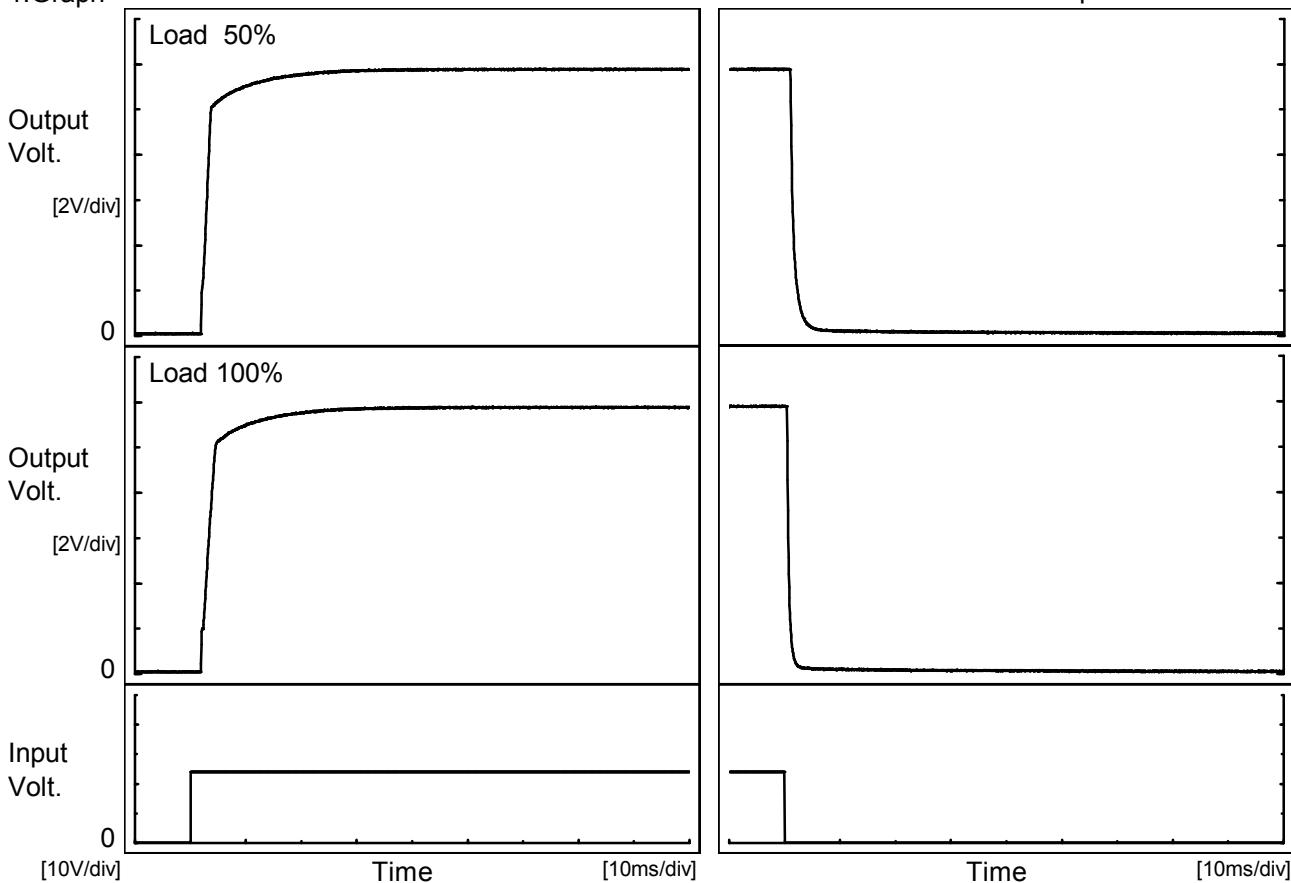
Input Volt. 24V
Load 100%

COSEL

Model	MGFW302412
Item	Rise and Fall Time
Object	+12V1.25A

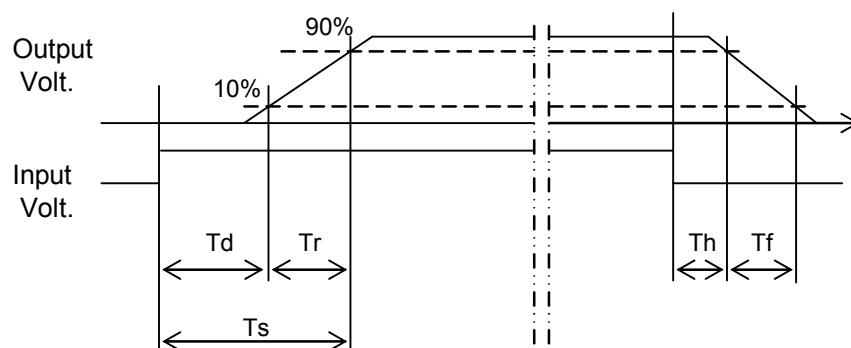
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		2.0	6.4	8.4	1.0	1.7	
100 %		2.0	6.8	8.8	0.5	0.8	

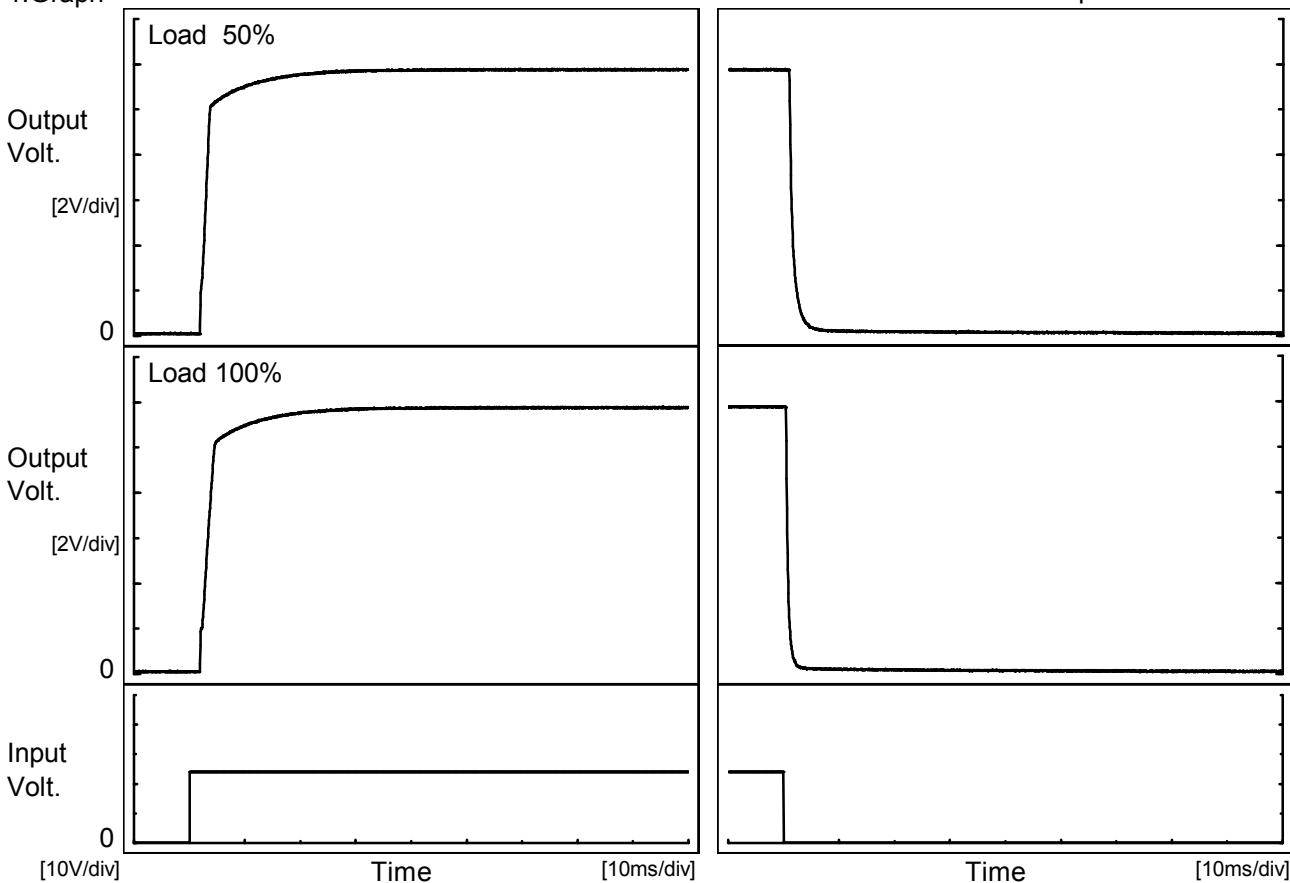


COSEL

Model	MGFW302412
Item	Rise and Fall Time
Object	-12V1.25A

Temperature 25°C
Testing Circuitry Figure A

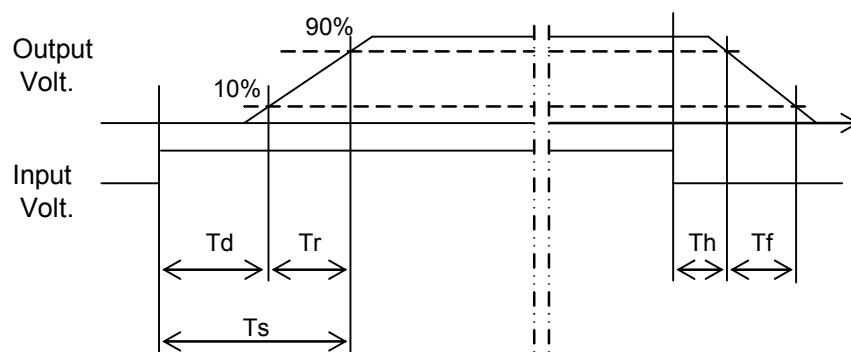
1. Graph



2. Values

Load	Time	Td	Tr	Ts	Th	Tf
50 %		2.0	6.4	8.4	1.0	1.8
100 %		2.0	7.0	9.0	0.5	0.9

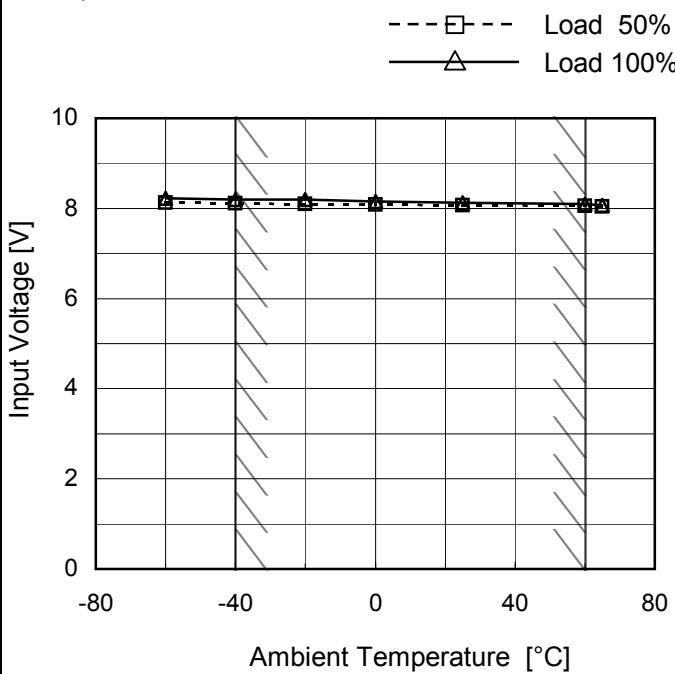
[ms]



Model	MGFW302412
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V1.25A

Testing Circuitry Figure A

1.Graph

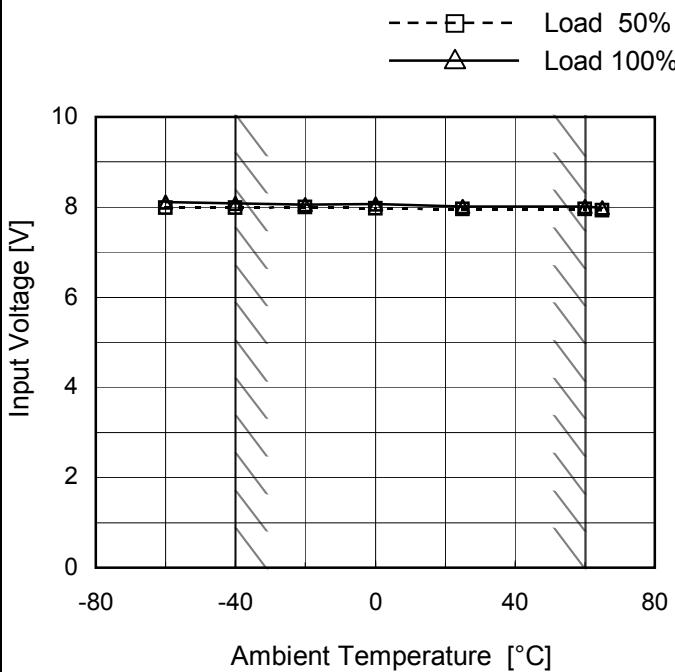


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	8.2	8.3
-40	8.2	8.2
-20	8.1	8.2
0	8.1	8.2
25	8.1	8.2
60	8.1	8.1
65	8.1	8.1
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V1.25A
--------	-----------

1.Graph



2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	8.0	8.2
-40	8.0	8.1
-20	8.0	8.1
0	8.0	8.1
25	8.0	8.1
60	8.0	8.1
65	8.0	8.0
--	-	-
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--	-	-
--	-	-

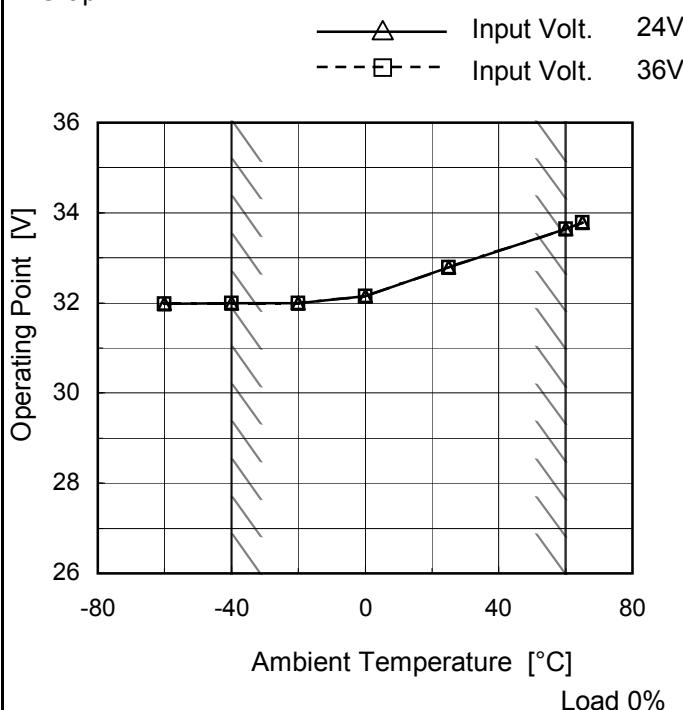
Note: Slanted line shows the range of the rated ambient temperature.

Model	MGFW302412	Temperature 25°C Testing Circuitry Figure A																																																																																							
Item	Overcurrent Protection																																																																																								
Object	+12V1.25A																																																																																								
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	Intermittent operation occurs when overcurrent protection is activated.																																																																																								

Model	MGFW302412
Item	Oversupply Protection
Object	+24V1.25A

Testing Circuitry Figure A

1. Graph



2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 24[V]	Input Volt. 36[V]
-60	31.98	31.98
-40	31.99	31.99
-20	31.99	31.99
0	32.14	32.14
25	32.79	32.79
60	33.64	33.64
65	33.78	33.78
--	-	-
--	-	-
--	-	-
--	-	-

Note: Slanted line shows the range of the rated ambient temperature.

Measured as a single output(+24V).

COSEL

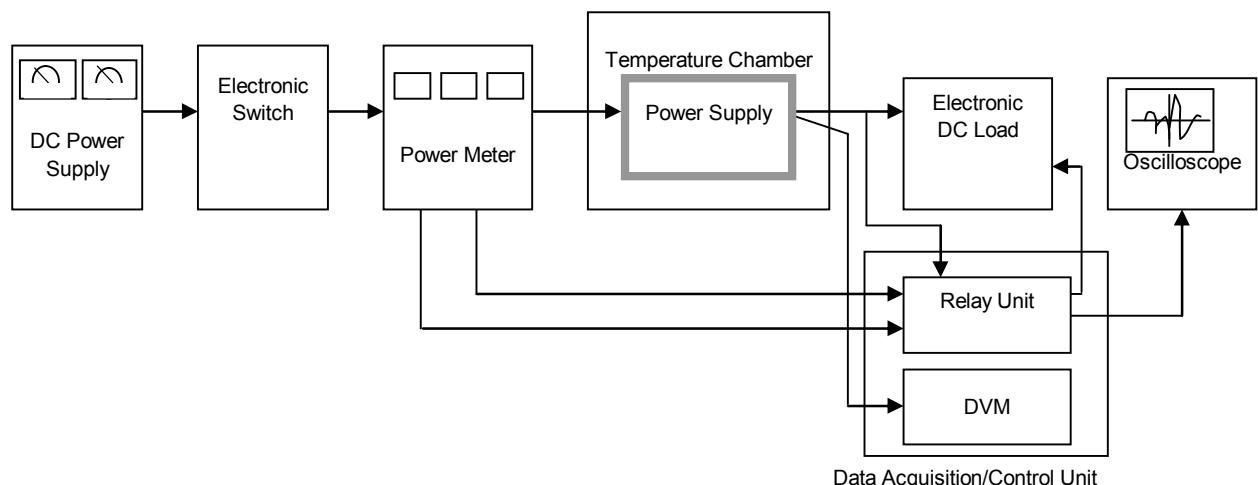


Figure A

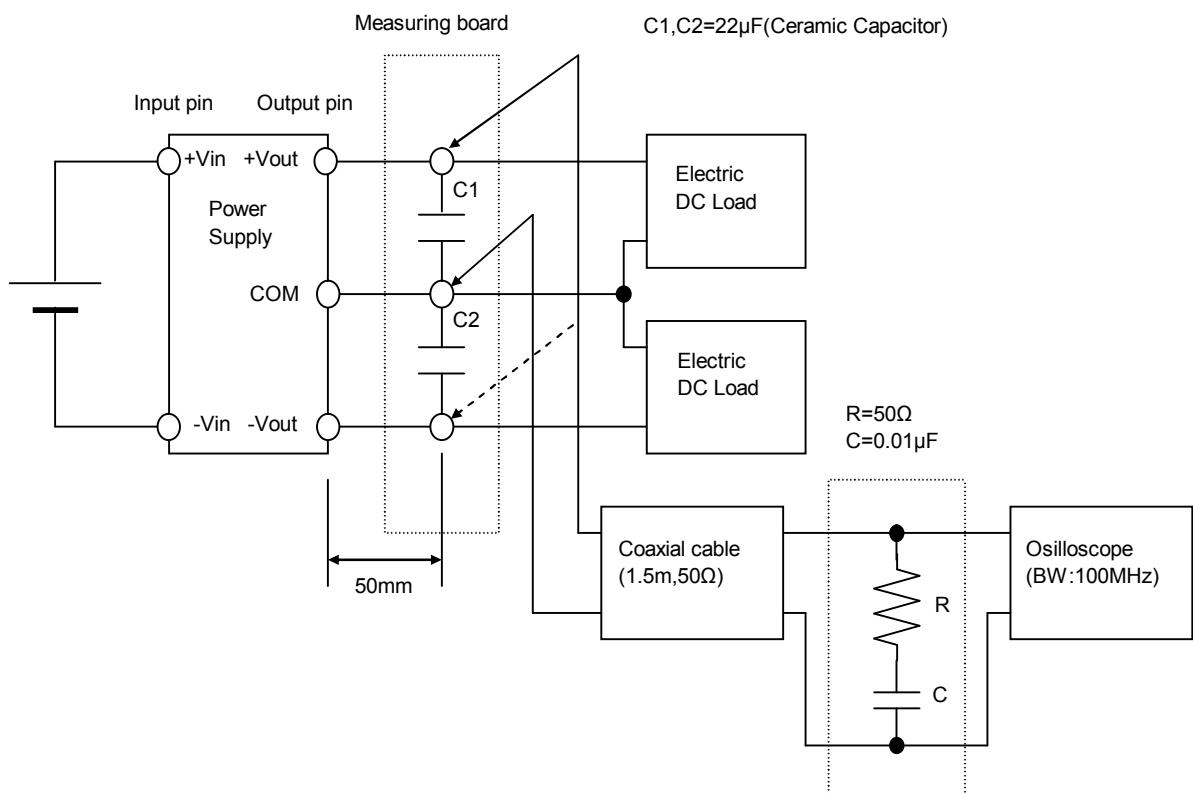


Figure B (Ripple and Ripple noise Characteristic)